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ABSTRACT

In the fall of 1969, the New York Metropolitan Reference and Research Library Agency (METRO), with the cooperation of the Medical Library Center of New York, began to plan a cost survey of the operations of the Center. The actual period of the survey is from January to June 1970. The survey provides an estimate of income and expenditures for the operation of the Center, based on staff, work performed, and input and output. The end result is the provision of a unit cost for each operation performed by the Center--storage, retrieval, cataloging, delivery and the operation of the Union Catalog of Medical Periodicals. This survey is confined to an analysis of current operations at the Medical Library Center and their costs. No attempt is made to evaluate these operations or propose alternative procedures. (Author/MF)

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METRO Miscellaneous Publication No. 6

THE MEDICAL LIBRARY CENTER OF NEW YORK:

A COST STUDY

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and Faye Simkin

Z7 002149

NEW YORK METROPOLITAN REFERENCE AND RESEARCH LIBRARY AGENCY
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CONTENTS

Preface		III
Medical Library Center of New York		1
Part I	Narratives and Flow Charts	
	Flow Chart Symbols	5
	Technical Services	6
	Union Catalog of Medical Periodicals	22
	Circulation Department	29
Part II	Cost Estimates	
	Summary	34
	Building Costs	36
	Space Measurements	37
	Administrative Costs	38
	Personnel Overhead	41
	Cost Calculations per Transaction	
	Technical Services	45
	Union Catalog of Medical Periodicals	52
	Circulation Department	56
Appendices		59

PREFACE

In the fall of 1969, the New York Metropolitan Reference and Research Library Agency (METRO), with the cooperation of the Medical Library Center of New York, began to plan a cost survey of the operations of the Center. The actual period of the survey was from January to June 1970. The survey was undertaken to provide an estimate of income and expenditures for the operation of the Center, based on staff, work performed, and input and output. The end result was provision of a unit cost for each operation performed by the Center - storage, retrieval, cataloging, delivery and the operation of the Union Catalog of Medical Periodicals.

METRO, in conjunction with the Systems Analysis and Data Processing Office of The New York Public Library (SADPO), provided the personnel for the cost survey. The concept of a Shared Acquisitions and Retention System (SHARES) developed by METRO found a suitable model in the Medical Library Center's retention and storage function. The study thus could determine the financial feasibility of a METRO-SHARES storage center for little used materials. Also, a cost estimate would be arrived at that could form a basis for the expansion of the Center's own services to include METRO member libraries at some future date. Coordination of the Center's services, e.g. a delivery system, with those of a similar nature that might be undertaken by METRO was another aim of the cost study. The ultimate goal was a detailed cost study of the Center's operations to provide the basis for financial support of a cooperative agreement between METRO and its member libraries.

This survey has been confined to an analysis of current operations at the Medical Library Center and their costs. No attempt has been made to evaluate these operations or propose alternative procedures. By mutual consent, both METRO and the Center have sought unit costs of operations performed as the major finding of this study.

The personnel of METRO and SADPO wish to thank the staff of the Medical Library Center for their guidance in determining job descriptions and performance and for their patience during the period of observation and questionning.

Special thanks are due to Mrs. Jacqueline W. Felter, Director of the Center, and to the Messrs. Herndon, Marsh and Carter for their time and effort in the data-gathering phase of the operation.

We should also like to acknowledge the assistance of Mr. John Peters of SADPO for his assistance during the initial phases of this project.

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August, 1970

THE MEDICAL LIBRARY CENTER OF NEW YORK

The Medical Library Center of New York, a METRO member, is an association of libraries serving the health sciences in medical schools, hospitals, medical societies and research institutions. It provides its members with a centralized storage and retrieval facility for seldom used materials. Other services include data on holdings for medical periodicals disseminated through the Union Catalog of Medical Periodicals and regularly published supplements, and a delivery service, used to transport material on interlibrary loan both between the Center and its members and among the various members.

The size of the collection, as of July 1970 is:

Serials (number of titles)	5,926
Texts and monographs	17,546
Dissertations (medical) approx.	200,000

Operation of the Medical Library Center is in the hands of a Director who administers the Center and its staff of librarians and non-professionals. The Director is responsible to a Board of Trustees, consisting of one administrator from each sponsoring institution. General policy and fiscal planning are their primary concern. An Advisory Committee of Librarians acts with the Director on service and acquisition policies.

The Center is supported principally by membership dues ranging from $3,000 annually for participating institutions to $10,000 annually for sponsoring institutions. A third category of membership, at $5,000 annually was designed to admit commercial firms to the association but, as yet, there are none among the membership. Additional support was acquired in the form of grants from several foundations, both for original renovations to the Center's building and for the initiation of special projects, most notably the Union Catalog of Medical Periodicals. These grants have not been computed in this cost study as they vary from year to year. A third source of revenue has been realized through the rental of unused parts of the building to such organizations as the New York Medical College and the Mount Sinai School of Medicine. Leases to the medical schools are, at least partially, on a short term basis. This affords the Center a source of income while allowing it to maintain suitable quarters for expansion as its programs are enlarged.

The storage facility operated by the Medical Library Center is designed to serve two purposes. First, it is a repository for seldom used library materials in the bio-medical and health fields, offering members a centralized point for deposit and retrieval of this material. This service frees member libraries' stacks for the shelving of more frequently referred works and obviates the need for widespread duplication. Secondly, as a temporary storage area available for a nominal

fee to libraries with building programs either in progress or planned, it enables its members to continue to add to their collections while the quarters needed to house them are being prepared. Material housed in this fashion is serviced by the Center's staff but is not available to other members on interlibrary loan except by direction of the owner.

Within the general categories of its collection policy (bio-medical and related subjects), the material held by the Center falls into all classes of literature except copies of material in microform. Deposit of material by the members is not regulated either by volume or type. Bibliographic control data is ordinarily not submitted with material. The Center processes incoming material, maintaining only an author catalog. Since no on-site services are provided, and all circulation is through interlibrary loan with all items requested by main entry, the need for extensive subject and title catalogs is lessened. Additionally, since monographs and textbooks are shelved in fixed locations by size, journals alphabetically by title, and dissertations by university, year, and author, there is no need to consider a subject classification scheme for location. A location number based on the size and author is penned on each monograph or textbook and typed in the catalog.

Requests for material are received principally through a TWX network from the Center's sponsoring institutions and through telephone requests from participating institutions. The Center absorbs the installation and monthly rental charges for the terminals used by the sponsoring institutions with the institutions billed for on line use. Participating members ($3,000 membership fee) are not provided with this service due to economic considerations but they are free to enter the network at their own expense. Interlibrary loan requests are also completed for non-members, at a unit cost per transaction.

Although the class of material held by the Center is for the most part seldom used, and conflicting requests are rare, an extensive photocopying (xerographic) service is maintained for requests for articles or material consisting of a small number of pages. This is done to further reduce the possibility of conflicting requests, to condense the bulk transported by the delivery system, to limit the amount of work involved in maintaining a circulation file, and to decrease the rate of deterioration of the material. Although non-members are assessed a charge for photocopies, the service is granted without additional charge to members, and is in fact extended beyond the Center's normal interlibrary loans. Each member is reimbursed on a monthly basis for photocopies of material prepared for other members.

Delivery of material on interlibrary loan, both from the Center to its members and between members, is accomplished through the Center's delivery system,

consisting of two rented trucks and two drivers employed by the Center. Member institutions are visited daily; material is dropped off or delivered to other members or returned to the Center. The service began with a single vehicle but, as the number of members has increased and the geographic areas widened, the additional vehicle became necessary. Routes covered by the vehicles have been designed generally to follow an east-west pattern, with one truck covering Manhattan, the Bronx and northern New Jersey, and the other providing service to Brooklyn, Staten Island, Queens and Nassau County. One supervisory staff member, who may be called upon to replace one of the drivers during sickness or vacations, is responsible for maintenance of schedules, records and contact with the rental agency. Material picked up by the vehicles for delivery to other members is returned to the Center, sorted by route location, and delivered to the designee on the following day.

Besides it's other activities, the Center is actively engaged in building a collection of doctoral dissertations in bio-medical,health, and related subjects from foreign colleges and universities. Material in this collection has been acquired in two ways. First, Columbia and Rockefeller Universities have agreed to deposit their current collections with the Center. The New York Academy of Medicine has deposited its retrospective holdings. In addition, Yale University, although not a member, has also agreed to contribute its dissertations on the appropriate subjects, in return for access to the remainder of the Center's dissertation collection. Secondly, the Center receives approximately 2,000 dissertations a year through an exchange program with foreign colleges and universities. The Center, of course, has no dissertations of its own to contribute to such a program, and distribution of United States doctoral dissertations is fairly well controlled by the Xerox Corporation through University Microfilms. The Center has undertaken the foreign distribution of the Bulletin of the New York Academy of Medicine and, through this medium, has managed to build an effective program.

The processes involved in cataloging, storing, and retrieving material housed in the Medical Library Center are outlined in the next section. Each process has been given a brief narrative description and is accompanied by a flow chart detailing each step of each function. The last part of the cost study consisted of detailed analyses of each service performed by the Center.

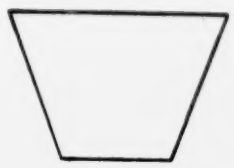
Part I

Narratives and Flow Charts

Flow Chart Symbols

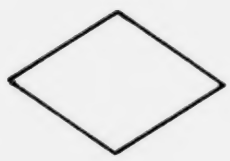
Input/Output

Process

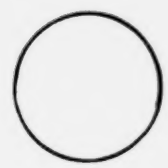


Manual Operation

Sort



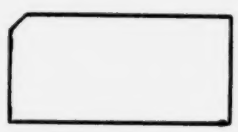
Decision



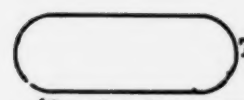
Magnetic Tape

Document

Offpage Connector



Punched card



Terminal

(Beginning, end or point of interruption of a process)

TECHNICAL SERVICES - SERIALS PROCESSING

Serials received by the Medical Library Center of New York are divided into four distinct categories for processing by the technical services department. The categories are based both on the sources and the publication dates of the serials.

CHART I - Current Subscriptions

Miss Berland is in charge of the serials which are received as current subscriptions. She opens the mail which is brought to her from the reception area and checks the serial arrivals against the Kardex serial file which it is her responsibility to maintain. If the serial in hand is of a later publication date than the next expected issue, Miss Berland will type and send a "serial claim form" for the missing issue or issues. After the Kardex entry for the serial has been updated and any needed claiming done, she then shelves the issue with others of the series in the Gift-Hold area of the stacks. At this point, her responsibility for the item ends.

As the various current subscription serials accumulate in monthly, quarterly, yearly or other appropriate groupings, Mr. Bates prepares them for the move to the permanent shelving area. The entries in the card catalog are updated and a xerographic copy is made of the updated catalog card. The photographed copy is sent to the Union Catalog of Medical Periodicals, where it is used to update the Union Catalog.

Mr. Sellers takes the accumulated issues to the permanent shelving area and shelves them by title. At this point, they become the responsibility of the circulation department.

These subscriptions constitute only a minor part of the collection building activity of the Center. They are intended to cover areas which are not a part of the collecting activities of the member libraries; notably, veterinary medicine.

Medical Library Center

Chart I

Technical Services - Serials
(Current subscriptions)

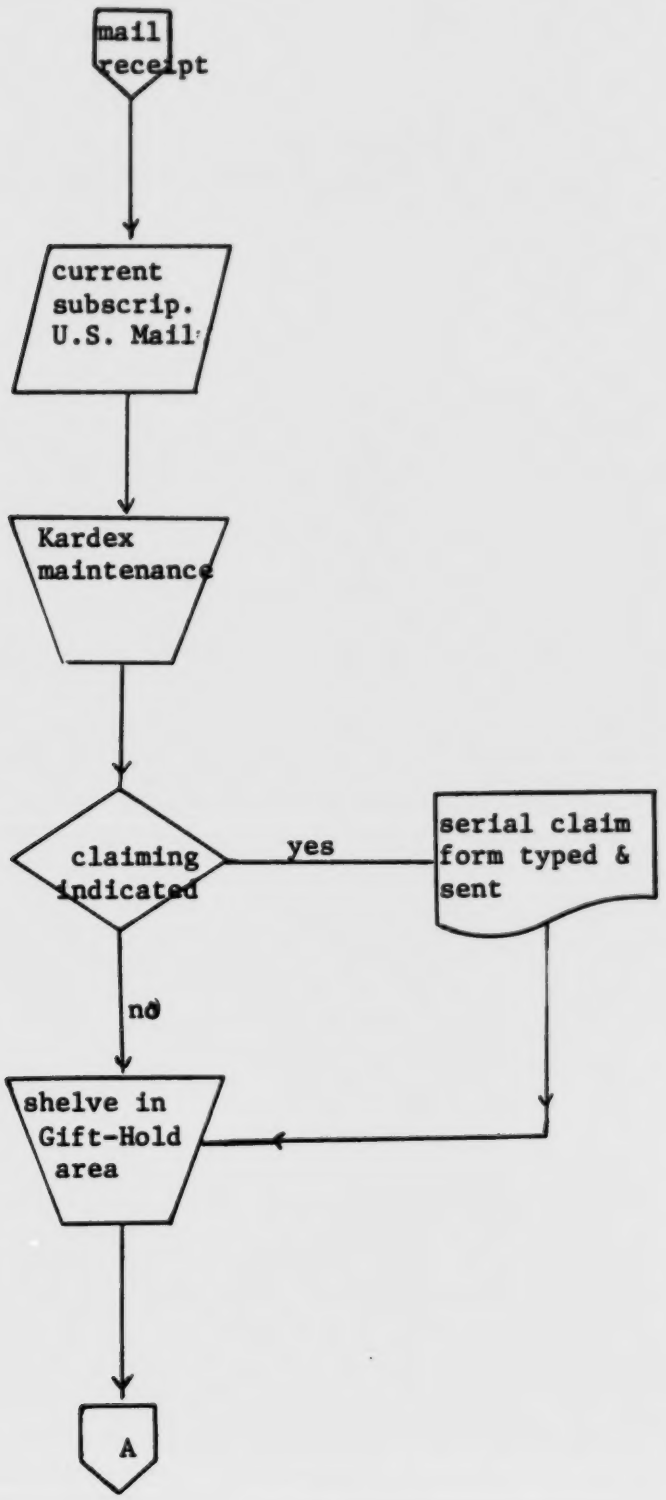


Chart I - Continuation

Chart I - Continuation

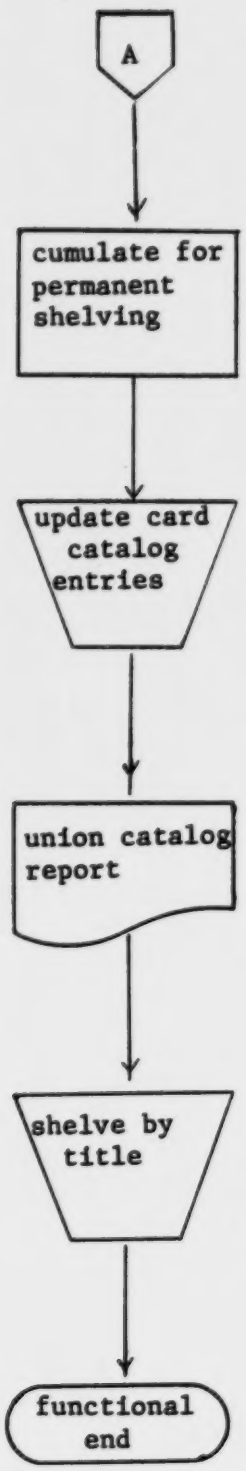


CHART 2 - Gift Serials

Gift serials are received from the member libraries, and on occasion, other sources. If they are given to the messengers by member libraries, they are delivered to the Center by trucks and are screened briefly by Mr. Carter, the circulation manager. When he determines that they are indeed gifts, he places them in the receiving area of the technical services department.

Mr. Sellers is the first member of the technical services staff to deal with gift serials. He inspects the date of the publication to determine the currency of the material. If it is current, he eliminates any duplicate copies and shelves the issues in the Gift-Hold area. They are then treated in the same way as serials received on current subscriptions. Mr. Bates attends to their accumulation, the updating of their card catalog records, and the preparation and sending of documentation for the Union Catalog of Medical Periodicals. Mr. Sellers shelves them in the permanent area by title.

If however the gift serials are not current, Mr. Sellers checks the card catalog for holdings of the particular title. In the case of duplicates, he weeds the volume using as his criteria binding and general condition. Mr. Bates then updates the card catalog record, and prepares and sends the documentation for the Union Catalog as before, and Mr. Sellers shelves the material in the permanent area by title.

Medical Library Center

Chart 2

Technical Services - Serials (Gifts)

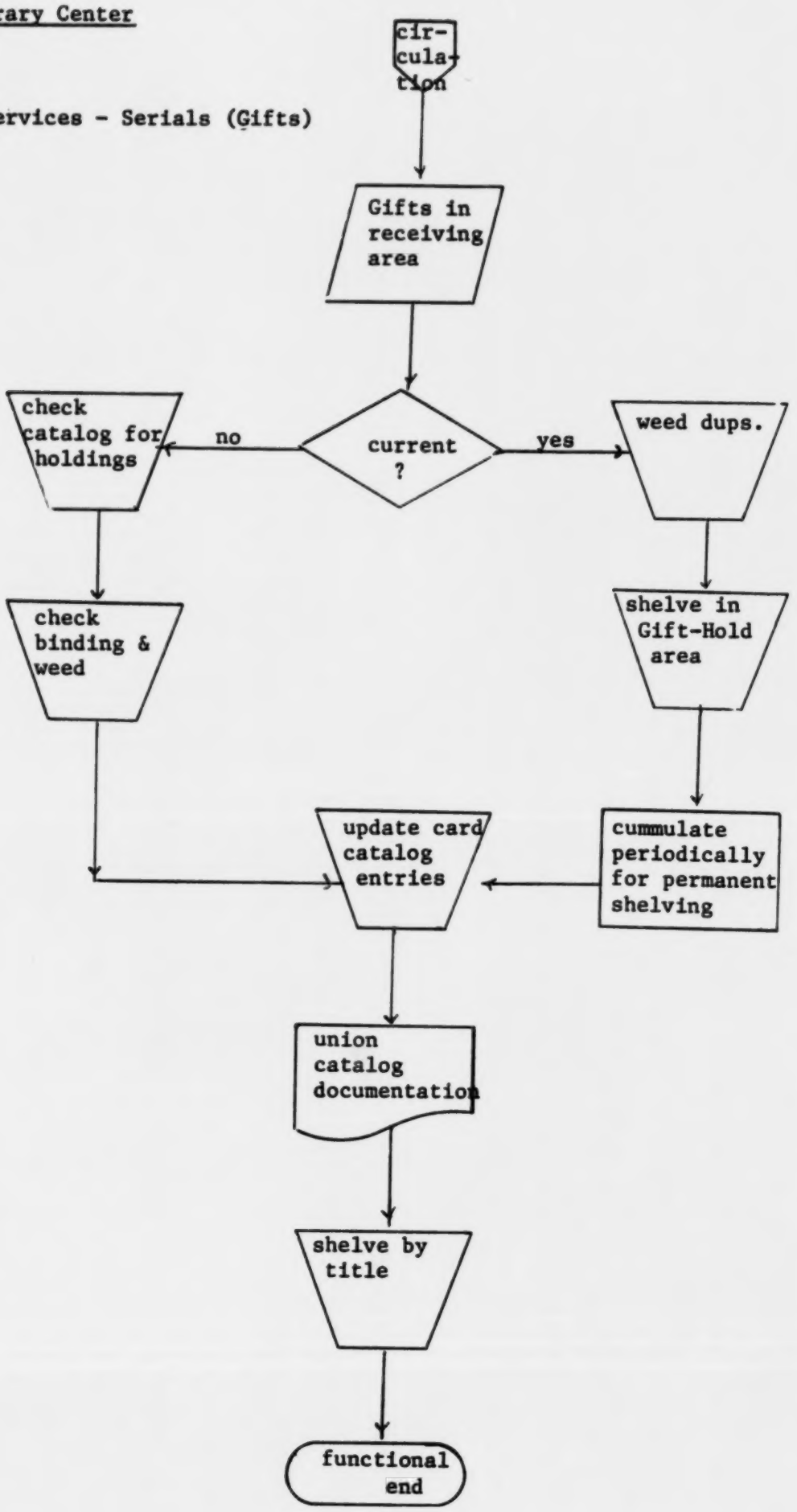


CHART 3 - Serials (Transfers)

Transfer serials are also gratis but they are specifically designated by donor libraries for transfer from their collection to that of the Medical Library Center. They arrive on the messenger trucks of the circulation department.

At times, potential donors of both gift and transfer serials telephone the Medical Library Center and inquire as to their suitability for the collection before sending them on the truck. Once transfer serials have arrived at the technical services receiving area, Mr. Sellers checks the card catalog for holdings, and after comparing bindings and condition, weeds duplicates.

Mr. Bates updates the card catalog entries, prepares and sends the photographed card for the Union Catalog of Medical Periodicals, and turns the material over to Mr. Sellers for permanent shelving by title. Current serials are not transferred.

Medical Library Center

Chart 3

Technical Services - Serials
(Transfers)

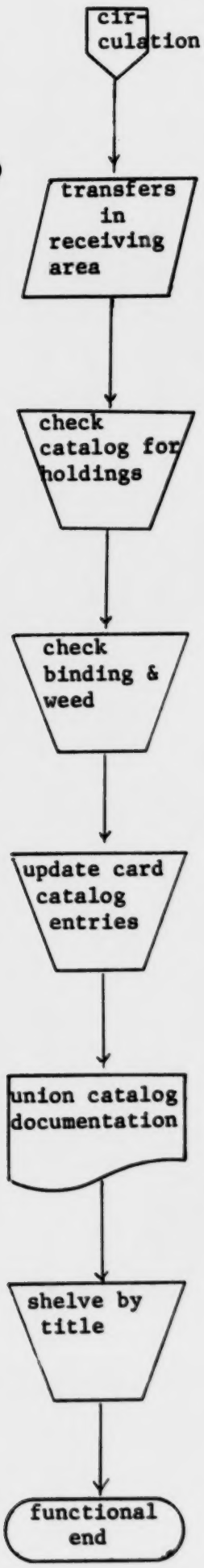


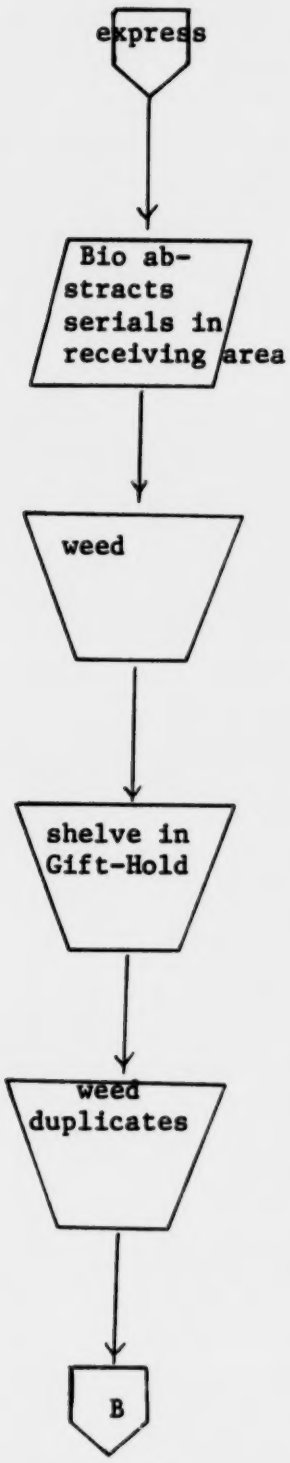
CHART 4 - Biological Abstracts

The fourth type of serial is sent by express to the Library Center from the publishers of Biological Abstracts. These are serials which have been abstracted in that publication which are sent in large quantities at rather widely spaced intervals. Mr. Bates inspects them in the receiving area, weeding any serials which do not fall within the subject boundaries of the Medical Library Center's collections. Mr. Sellers shelves the remainder in the Gift-Hold section of the stacks, weeding duplicates as he shelves. Processing, from this point, is the same as for the other serials from the Gift-Hold stack area.

Medical Library Center

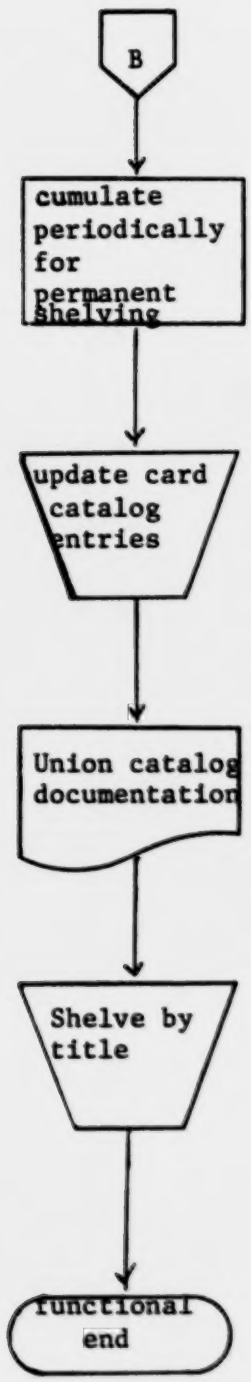
Chart 4

Technical Services - Serials
(Biological Abstracts)



Medical Library Center

Chart 4 - Continuation



TECHNICAL SERVICES - MONOGRAPH PROCESSING

CHART 5

The following is a description of the processing of monograph records by the technical services department. There are two kinds of monographs that are received by the Medical Library Center. One type of monograph is for the professional collection for the use of the library staff. The other monograph is for the designated Medical Library Center Collection, received as transfers from the member libraries. This description is concerned with the latter type of monograph.

All monographs are received gratis from the member or other libraries and are usually sent by the delivery service. They are all termed "gifts" and have been sent to the Center for permanent shelving. Upon receipt of the monographs, Mr. Sellers shelves them in approximate author alphabetical order by size in three separate shelving areas. No record is made of the monograph at this time. According to the Medical Library Center personnel, the member libraries, with the exception of the New York Academy of Medicine, make no note in their catalogs that the volume has been sent to the Center, but simply remove the volume card. Mr. Sellers shelves the monograph in the work area, and a cataloger checks the book catalog to determine if the volume has been previously cataloged. If the monograph has been cataloged, Mr. Sellers determines if the newly transferred book is in better physical condition than the old volume. If this is so, he sends the book to Miss Berland who places the Medical Library Center's classmark on the spine and then replaces the older volume. If the book is not in better condition than the one already shelved, it is placed in an exchange section if current (since 1950) or a classic medical monograph. Otherwise it is discarded. As time permits, technical services staff go to the temporary shelving area and retrieve the volume from the shelf for cataloging. There is no particular order to this process, in so far as date of arrival. Volumes are selected from the A size, author sequence. Categories of size employed by the Medical Library Center are:

A (up to 9 inches)
B (up to 10 inches)
C (up to 11 inches)
D (everything over 11 inches)

The volume is pulled from the shelf and a "fixed order" classmark is assigned. The classmark is determined by placing a paste-on label from a set of labels that has been previously typed. Once the classmark is assigned, a coding sheet is filled out for the book catalog entry. This coding consists of assigning a unique number to each volume by a system based upon the Cutter Number, listing the author, title, edition, etc. The book catalog is arranged in author sequence, with name cross references. Once the sheet has been coded, it is sent to the keypunch operator, who

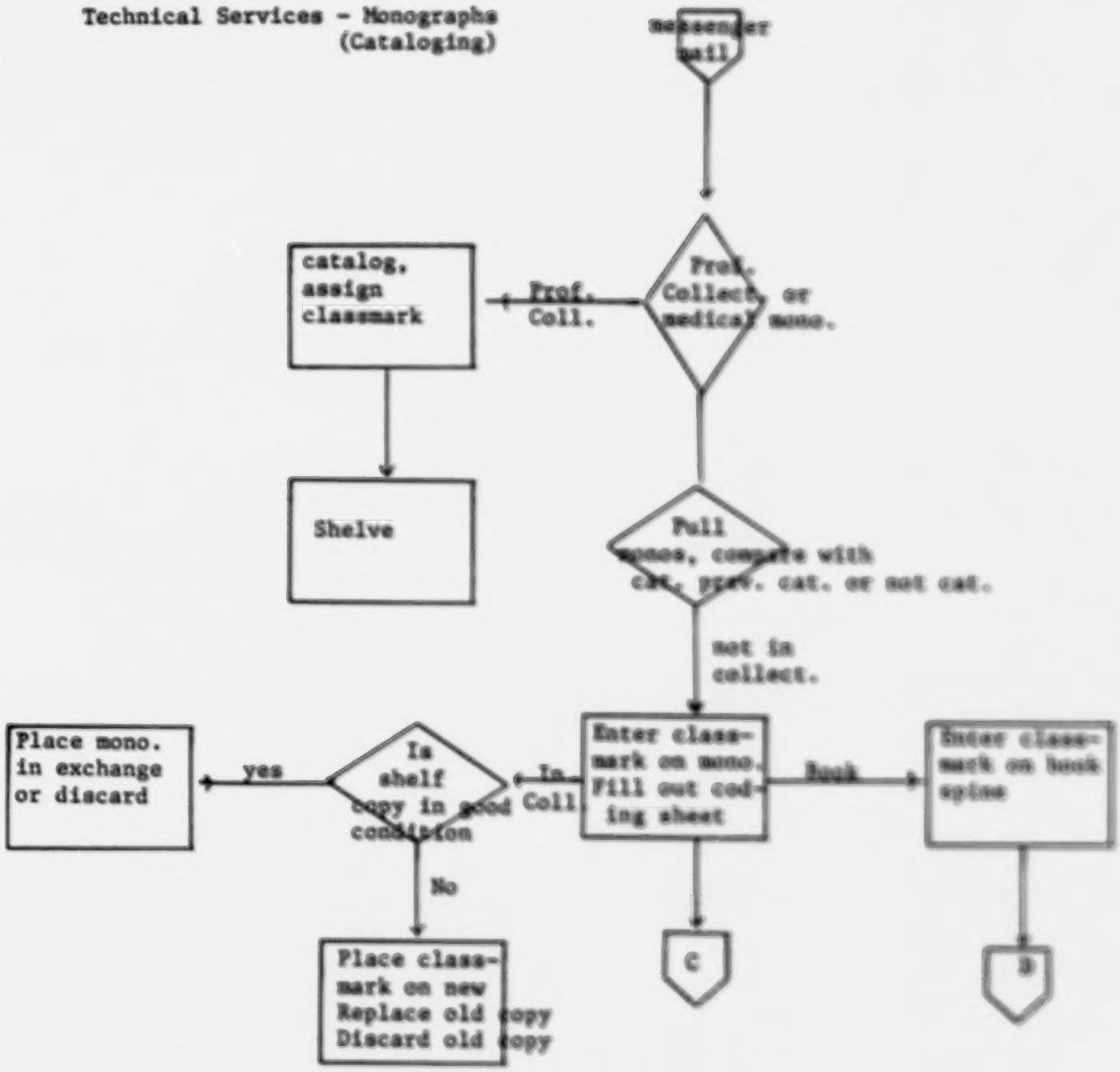
keypunches the cards. At the time the coding sheet is made out, the book is sent to Miss Berland who enters the classmark on the spine. Mr. Sellers then shelves the volume. The card and coding sheets are returned to the catalogers, who revise the cards against the coding sheet. The cards are accumulated periodically and a computer run is made to add them to the master tape of monograph holdings. The master tape is printed out from time to time to form the holdings list of the volumes in the collection.

The professional collection arrives by parcel post, received by Mrs. Conway, the Center's executive secretary. Mr. Herndon selects relevant material from library literature on the basis of a recommendation from librarians on the staff. An order for this material is typed and mailed by Miss Berland. The collection is limited; the annual budget is $5,798. Processing of the professional collection consists of assigning a classmark, ordering a Library of Congress card, and affixing the classmark to the Library of Congress card. The items are cataloged by the Center if a Library of Congress card is not available. The card is filed in the catalog maintained for the professional collection.

Medical Library Center

Chart 5

Technical Services - Monographs
(Cataloging)



Medical Library Center

Chart 5 - Continuation

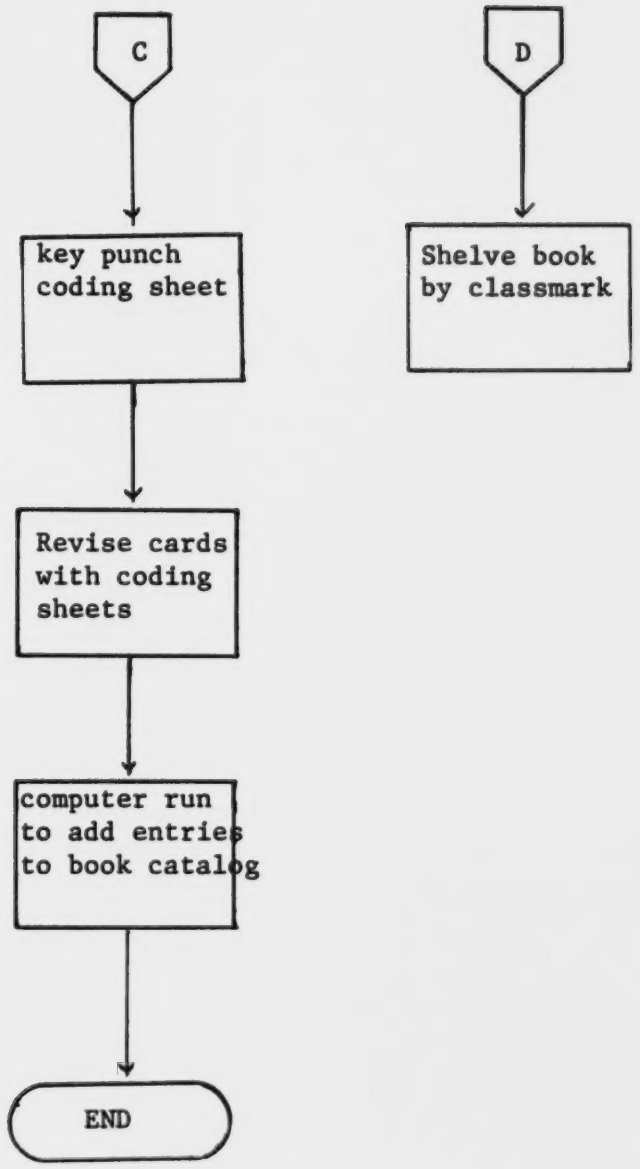


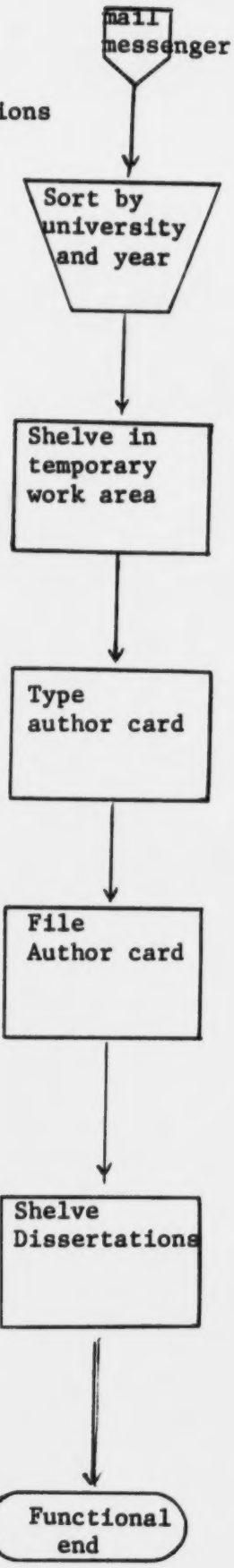
CHART 6 - Dissertations

Dissertations are deposited by member libraries or received through an exchange program. When dissertations arrive through the mail or delivery service, they are sorted by university and year. Non-medical theses and duplicates are discarded. The dissertations are shelved temporarily in the work area to await cataloging. Cataloging of dissertations is kept to a minimum; only an author card is typed. The author cards are filed. Dissertations, after being stamped with an ownership stamp and the name of the university, are shelved in the following order: a) University, b) year, c) author.

Medical Library Center

Chart 6

Technical Services - Dissertations



UNION CATALOG OF MEDICAL PERIODICALS - PROCESSING

CHART 7

Processing of records for the Union Catalog of Medical Periodicals begins with the receipt of a "report card" from a member institution (including the Medical Library Center itself) which identifies the title and holdings to be entered in the catalog.

A statistical compilation is made from the report cards and they are given a preliminary sort into two groups, (1) new titles and (2) those expected to be in the file and requiring 006 (holding) manipulation. The two groups of report cards are then checked in a rotary file of all titles to verify the preliminary designation of "new" or "update".

Update Records

A sort group number of 6-9 digits is copied on update report cards from the rotary file and the data to be added in the update is pencilled in on the rotary file card, which is then given a colored tab, indicating its update computer run. A coding sheet is prepared from the report card. The coding sheet with report attached is revised by another coder for errors in transcription, and the material is returned to the original coder for correction of errors. The coding sheets are then turned over to Mr. Marsh, who batches them and checks them for errors in format. They are then keypunched, and the keypunching is revised and corrected. The punched cards are accumulated for computer updating, which is scheduled at two month intervals.

In preparation for the computer update the punched cards are sorted on an IBM 082 sorter by the housekeeping fields column 1-17 and 79-80. The sorted cards are checked column by column against the 80/80 printout of the master tape to make sure that the housekeeping field on the cards corresponds exactly to its counterpart on the master tape, thus enabling the op code (computer function code) to function correctly. Errors are corrected and the cards re-filed. The rotary file is consulted only if necessary for a new title. The update cards are then ready for the computer.

The computer run has two types of output:

1. A new master tape.
2. Rotary file cards for each updated and/or new title created.

Lists, as needed, such as a complete 80/80 printout or an 80/80 printout of only updated and new titles are produced from the new master tape.

New Records

When the report card contains a new title, the initials "N. T." are written on it, and a verification is made of the bibliographic data. A coding sheet is made for it, and a temporary slip is typed for insertion in the rotary file. The temporary rotary file cards, coding sheet, and report card are kept together. Batches of new material are given to another coder for review. This coder takes the material to the rotary file and assigns a sort group number to each title. The sort group number is recorded on the coding sheet and the card is filed by sort group number in the rotary file. The coding sheets are returned to the original coder, who goes back to the rotary file and checks the sort group number. The sheets are batched and checked for format errors by Mr. Marsh. From this point on, processing duplicates that of the records to be updated.

Chart 7

Union Catalog of Medical Periodicals - Processes

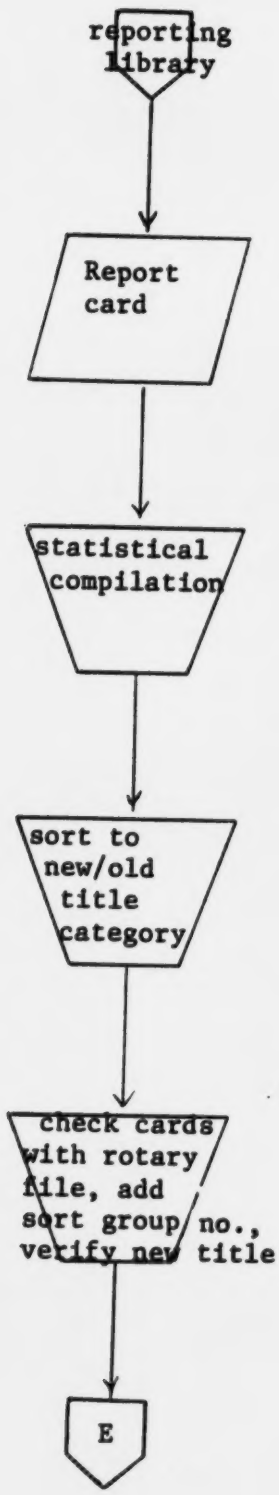

reporting library
Report card
statistical compilation
sort to new/old title category
check cards with rotary file, add sort group no., verify new title
E

Chart 7 - Continuation

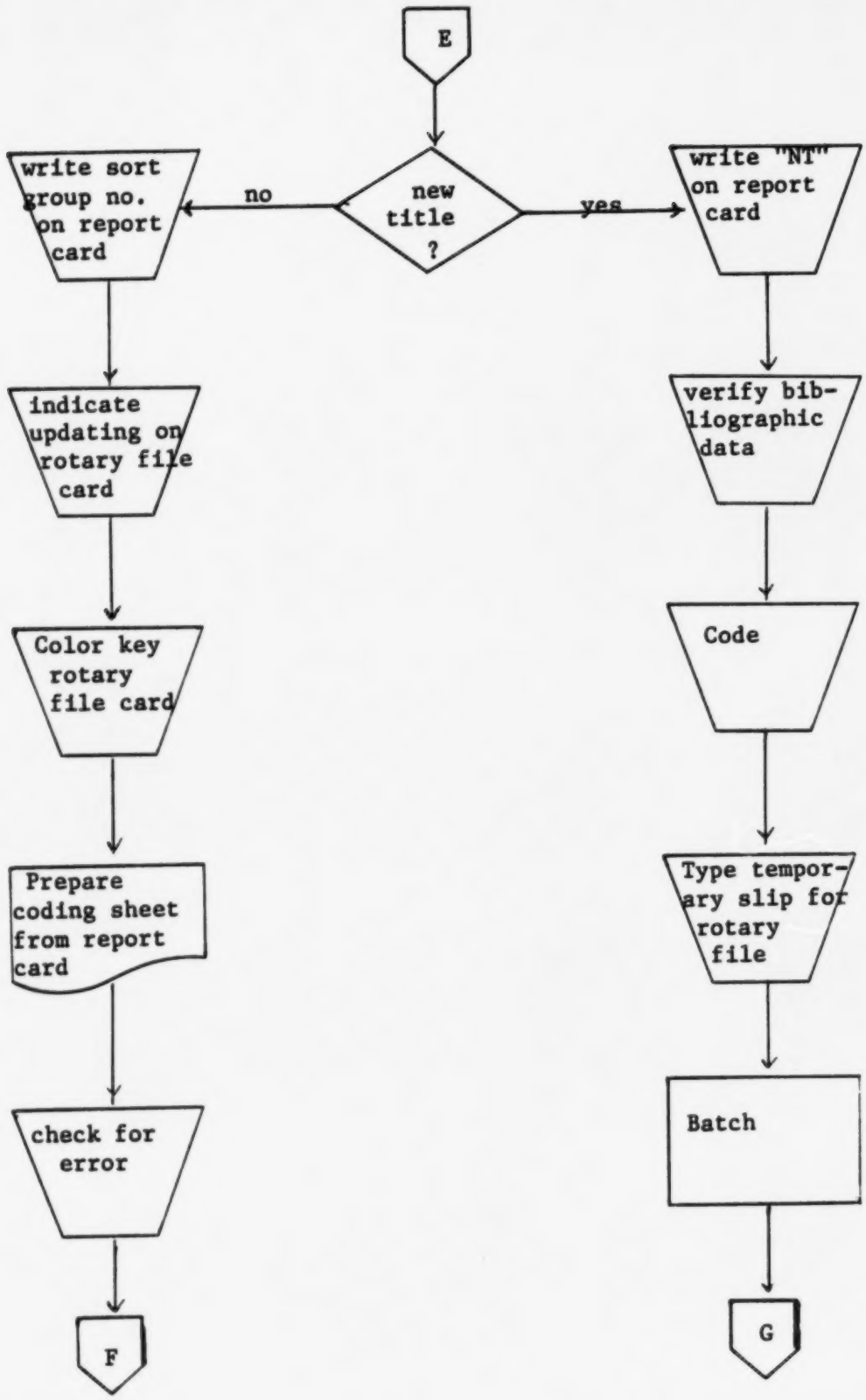


Chart 7 - Continuation

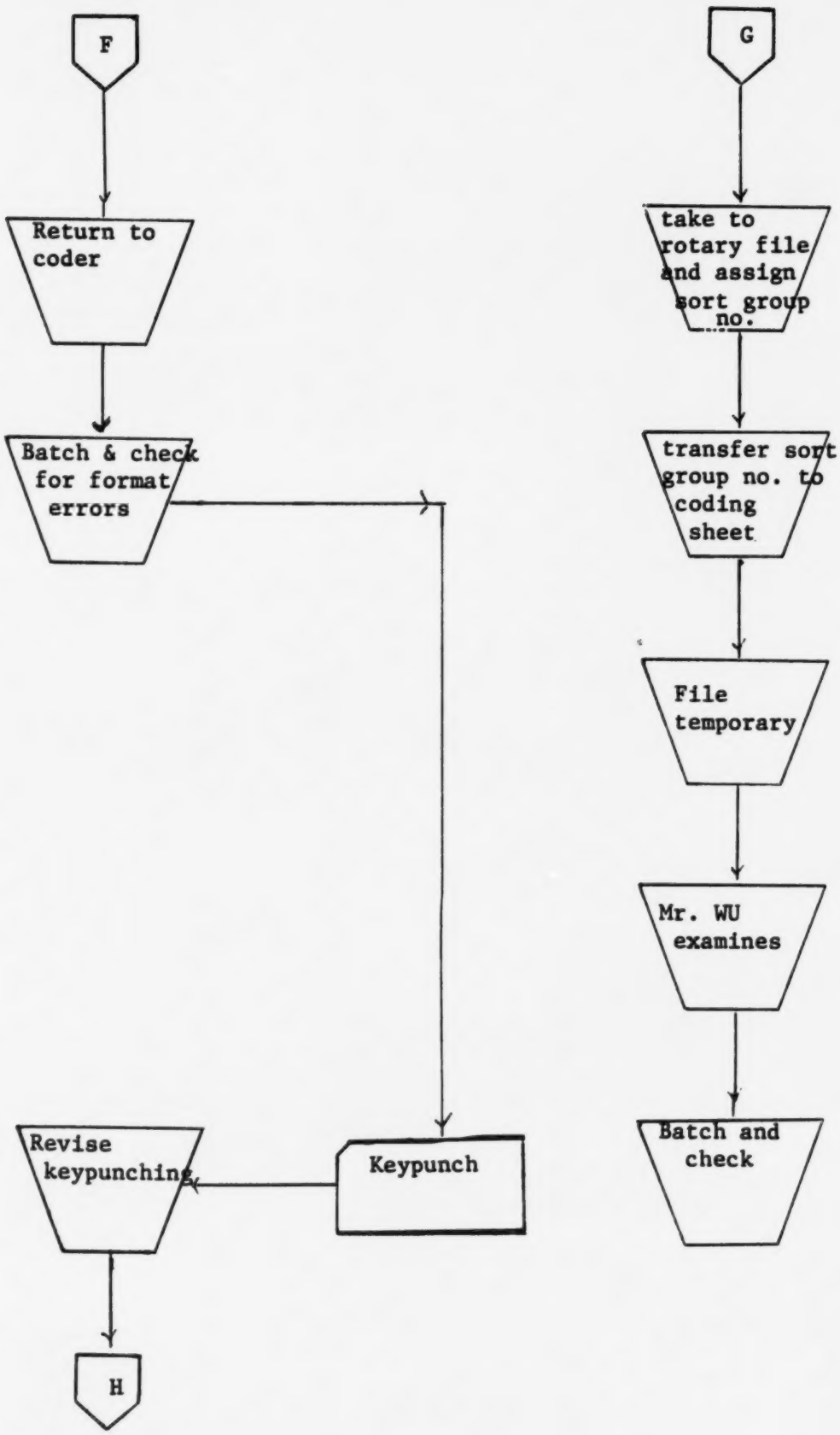


Chart 7 - Continuation

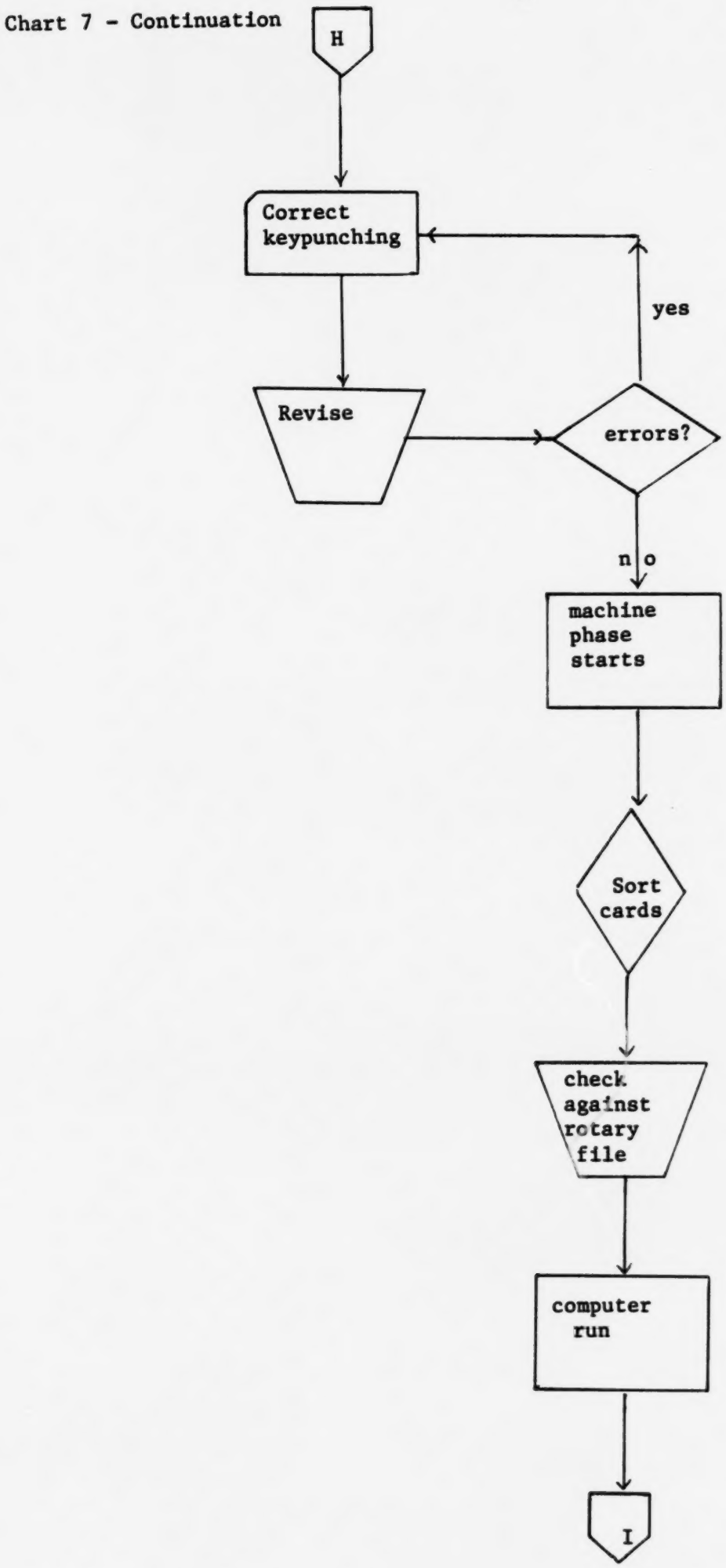
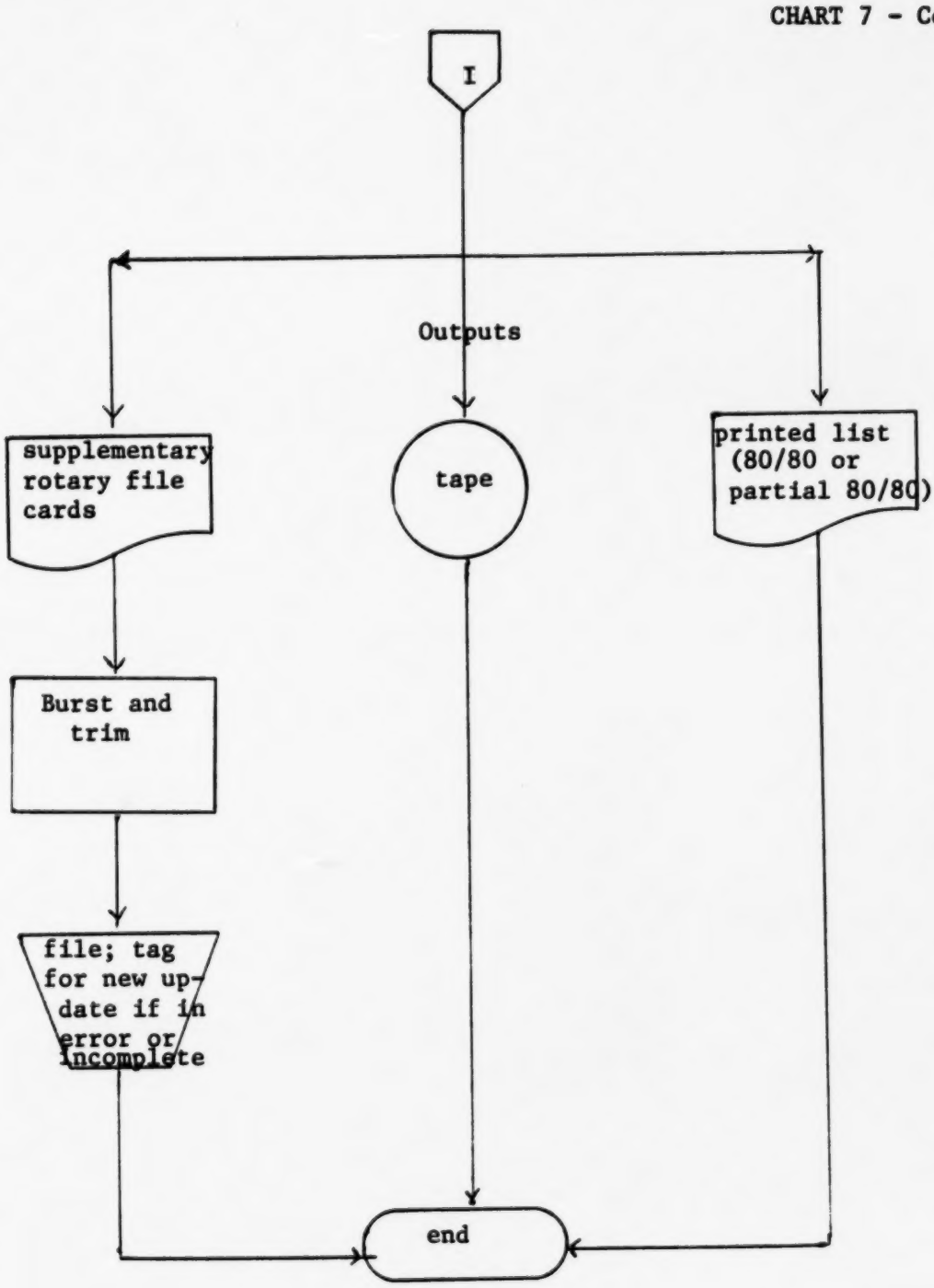


Chart 7 - Continuation

CHART 7 - Continuation



CIRCULATION DEPARTMENT

CHART 8

The department has three members at present, a circulation manager (Mr. Carter) and two drivers. A secretary has been projected for employment but was not present at the time of this study. The activities of the circulation department can be divided into three functions:

a) retrieval of items in the Medical Library Center
b) reshelving of items returned from loan
c) delivery service among member libraries

The first two functions are performed by Mr. Carter; the last function is performed by the drivers under the supervision of Mr. Carter.

The retrieval of items will be described first. Requests for items (books, serials, dissertations, etc.) are received by either the mail, TWX, telephone or messenger. The requests by mail and messenger are usually entered on a standard ALA form. Telephone requests are recorded on a request slip. There are two types of material handled, either rental or Medical Library Center. The rental storage items have been placed in a special area by the libraries renting space. The materials in these sections belong and are controlled by the renting library. All records of material stored within these sections are kept by the library depositing the materials. The materials in the Medical Library Center collection belong to the Center and all records are kept by the Center.

When a request is received, Mr. Carter scans the request to determine if it is a rental or Medical Library Center item. If it is a request for a monograph belonging to the Center, the book catalog is checked for its location mark. If the request is for a serial or a monograph not yet cataloged, Mr. Carter will go directly to the shelf to retrieve the item. If the serial is not on the shelf, he checks the rotary file in the Union Catalog of Medical Periodicals or the serial Gift-Hold section (if the request is for a current year). The item is then sent to the requestor and a charge card is filled out for the request and filed. For certain items, e.g. brief journal articles, Mr. Carter reproduces a copy to send to the requestor. If the request is from a non-member and can be filled, an invoice is made to bill the requestor for the services. The invoice is made out in the circulation department and is forwarded to the Center's secretary for typing.

If the volume requested is not on the shelf, Mr. Carter scans the charge cards to determine if the item is out on loan. This is not a likely occurrence due to the nature of the material in the Center. If the material is out on loan, Mr. Carter notifies the requestor that the material is not in the library. Requests are received for items that do not appear in either the book catalog or Union Catalog of Medical Periodicals, or do not match the information printed. These items will be researched either by Mr. Carter or other members of the library staff to determine if the title or author is listed erroneously. If the error cannot be found the requestor may be telephoned for clarification. If the material still cannot be found in the library, notice is sent back and the original request is filed in a temporary reference file. No reserve list is kept for materials that are out on loan or not located in the library.

If Mr. Carter receives a request for a rental storage item he goes directly to the shelf for the item. If found, he fills out and files a rental storage card, and sends the item by messenger to the requestor. If the item is not on the shelf, he scans the rental card file (each storage area has a different file) to determine if the item is already out. If there is no indication of a loan, it is assumed that the item was not placed in storage and notice is sent to the requestor. When earlier loan is indicated, notice to this effect is sent back to the requestor. When an item is returned to the library, the circulation department staff identifies the item as rental or belonging to the Center. The rental charge card or charge card for the Center is pulled from the active file and placed in the inactive file. The material is then returned to the shelf.

The delivery service utilizes two vans, with two drivers covering different routes. Mr. Carter prepares all items leaving the library the day before each run. The items to be delivered are placed in envelopes with codes for each of the stops en-route. The drivers pick up material for delivery either back to the Center or to other libraries on the delivery routes. If a delivery is to be made from one member library to another not on the same route it is brought back to the Center, sorted by Mr. Carter, and delivered on the following day's run.

Medical Library Center

Chart 8

Circulation Department - Retrieval

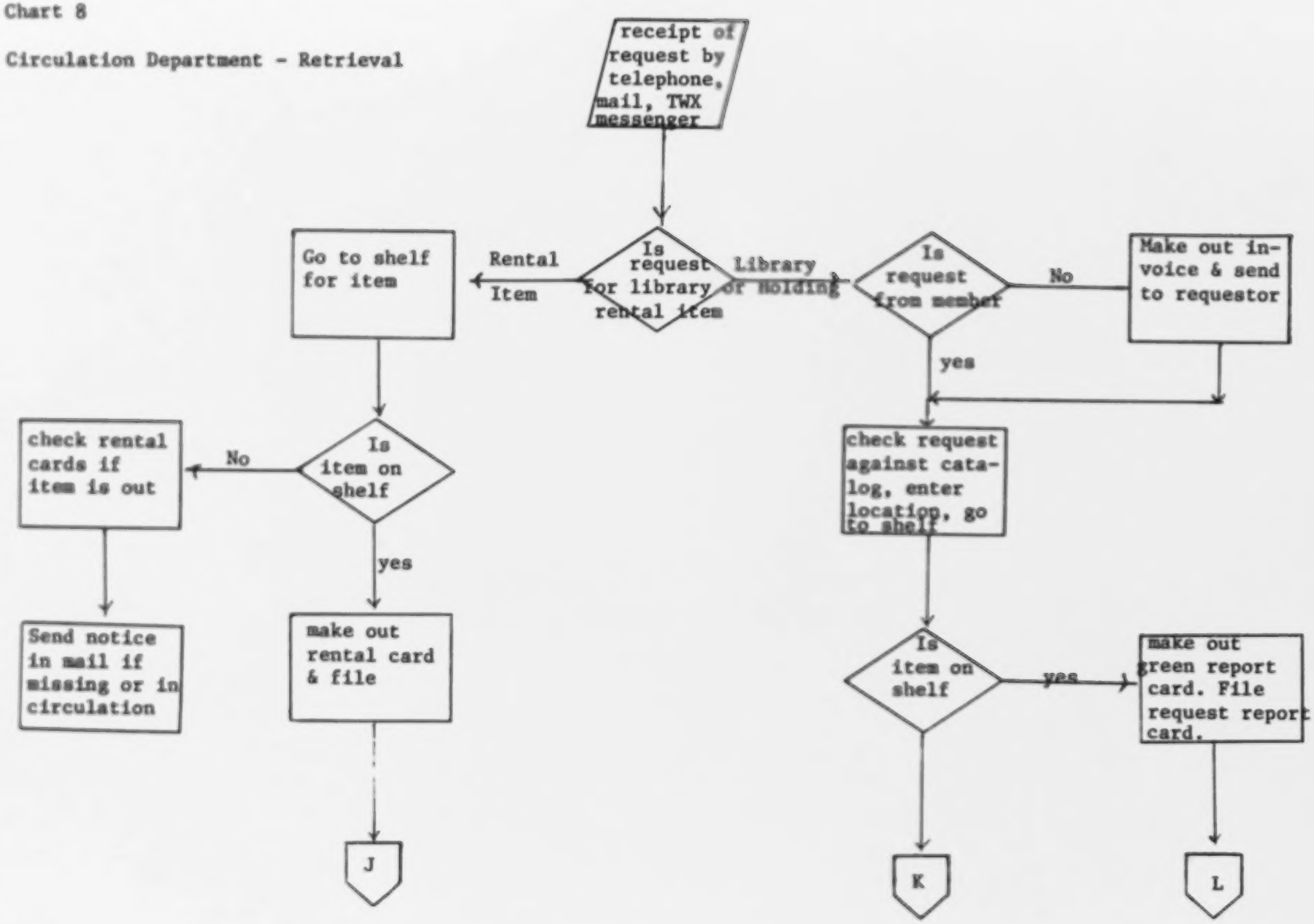
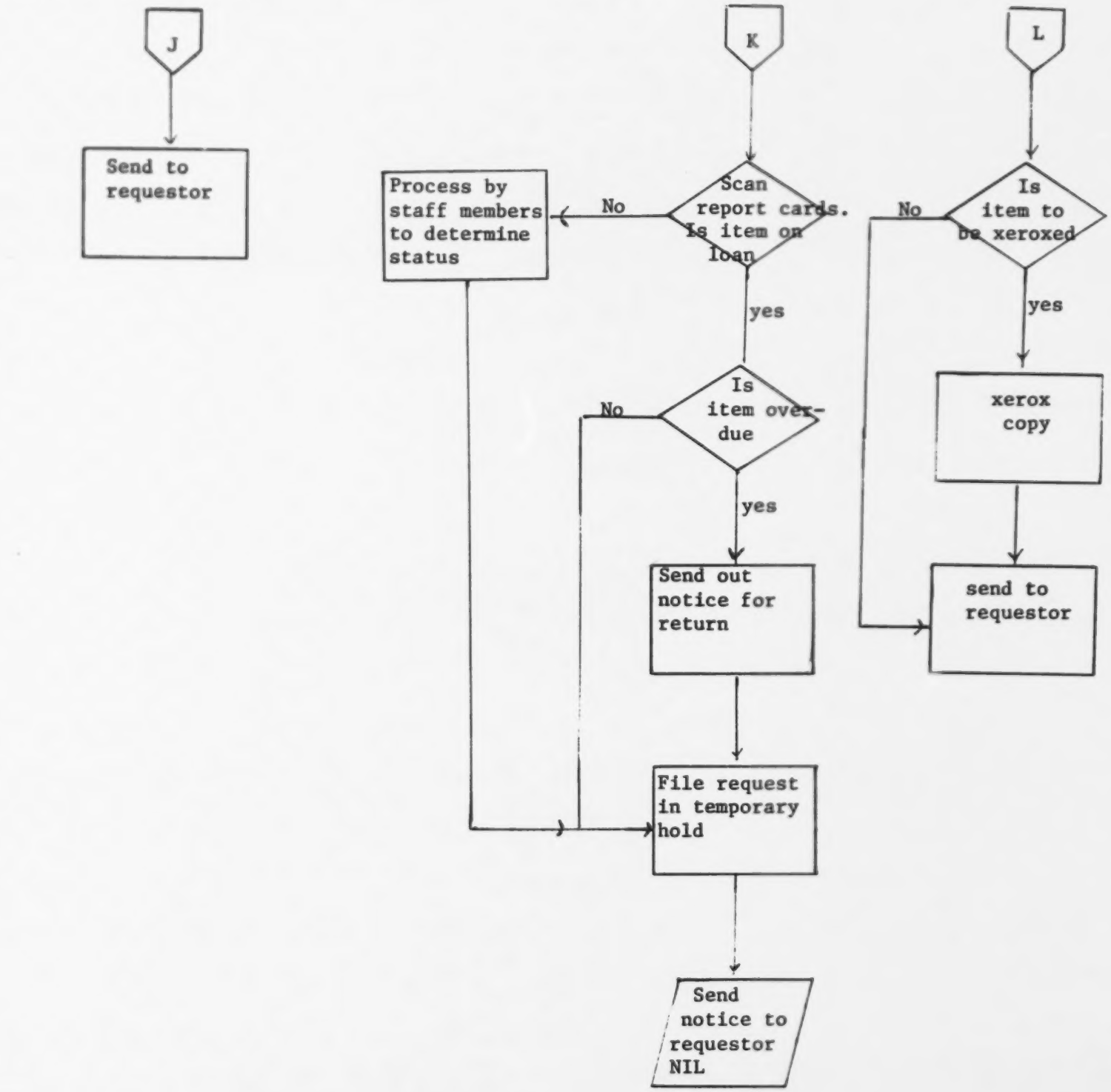

receipt of request by telephone, mail, TWX messenger
Is request for library rental item
Rental Item
Library or Holding
Go to shelf for item
Is request from member
No
Make out invoice & send to requestor
yes
check request against catalog, enter location, go to shelf
Is item on shelf
No
check rental cards if item is out
Send notice in mail if missing or in circulation
yes
make out rental card & file
J
Is item on shelf
yes
make out green report card. File request report card.
K
L

Chart 8 - Continuation



PART II

COST ESTIMATES

SUMMARY OF COSTS

Per Hour	
Administrative cost per employee	$2.059
Building cost per employee:	
Technical Services	$ .207
Union Catalog of Medical Periodicals	$ .222
Circulation Department	$ .3856
Personnel Overhead:	
Technical Services	$3.028
Union Catalog of Medical Periodicals	$2.514
Circulation Department	$3.260
Storage cost per item	$ .373 per square foot

Summary of per Transaction Cost Calculations

Technical Services	
1) Current subscriptions	$1.58
2) Serials - gifts	$ .70
3) Serials - transfers	$ .70
4) Biological Abstracts	$ .70
5) Monograph cataloging	$2.04
6) Dissertations	$ .546
Union Catalog of Medical Periodicals	
1) Old titles	$3.06
2) New titles	$4.19
Circulation Department	
1) Retrieval	$ .94
2) Rental items	$1.27
3) Delivery	$ .929
Cost per mile	$ .402

The calculations in this section are based upon the following premises:

1) Administrative costs are prorated among each of the employees equally.

2) Amortization costs are added into the annual building costs.

3) There are two costs calculated. One is a per transaction cost for each type of operation outlined in the flow charts. Here, administrative costs, office space, telephones, etc. are prorated according to the number of employees in each section. The other cost calculation is the annual storage charge. This represents only the cost of shelving space.

Capital costs are listed below as separate items. The amortization rate includes capital expenses, renovation, and the original purchase of equipment. Capital costs are calculated in the per transaction figures.

Total cost of building	$940,000 (of which cash payment was $450,000)
Mortgages	$490,000
Renovations	$376,000 (includes original shelving)

BUILDING COSTS

Operating statement January - December 1969	$89,862
1969 amortization cost is 2% of original building cost or $24,023	$24,023
The Medical Library Center occupies 3/16 of the space of the entire building. Building cost estimates are based on 3/16 of the above figures or $21,352 per year	$21,352

In addition, the following costs are added from the General Fund Operating Expense Statement:

Electric	$5,081
Fire Alarm Service	580
Cleaning Service	5,340
Repairs	1,587
	$12,588

Total annual building costs are:

3/16 of original building cost and amortization	$21,352
Operating expenses	12,588
	$33,940

SPACE MEASUREMENTS

The annual building cost for each section of the Medical Library Center was computed by measuring actual on-site use and through the use of floor plans. The following percentages were obtained:

I	Administrative Department	
	Allocation of space includes administrative offices, hallways, closets, staff rooms, etc.	16.74%
II	Technical Services	
	Includes actual office space	5.38%
	Storage space (all space in use on sixth and seventh floor utilized for the storage of Medical Library Center material)	67.07%
III	Union Catalog of Medical Periodicals	
	Includes only the actual office space utilized by UCMP personnel	5.78%
IV	Circulation Department	
	Includes office, preparation and loading spaces utilized in circulation and retrieval of material	5.01%
	Total	99.98%

ADMINISTRATIVE COSTS

Costs for maintaining the administrative services of the Medical Library Center are composed of the following:

1) Personnel - salaries and fringe benefits (14% of salary)	$28,840.36
2) Building Costs (16.74% of $33,940.00)	$ 5,681.61
3) Miscellaneous	
a) Supplies	$ 3,715.00
b) Travel	1,052.00
c) Insurance	1,435.00
d) 10% of postage	76.80
e) 2/13 of telephones	364.91
f) Professional fees	1,770.00
g) Xerox (1/6)	337.50
h) Miscellaneous	2,118.00
Miscellaneous Total	$10,869.21

Combined Totals

Personnel	$28,840.36
Building Costs	5,681.61
Miscellaneous	10,869.21
	$45,391.18

ADMINISTRATIVE COSTS PER EMPLOYEE

The number of employees in each section are:

Administrative Services	2
Technical Services	6
Union Catalog of Medical Periodicals	6
Circulation Department	3
	17 (15 is the number used for computation; two administrative positions were deducted)

Total administrative costs	$45,391.
Number of employees	15
Administrative cost per person	$ 3,026.08
Total work time	1470 hours *
Hourly cost ($3,026.08 ÷ 1470)	$ 2.059 per hour

* The number of hours worked per year was calculated to be 1470, or seven times the days in the year, less weekends, holidays, maximum sick leave days, vacation allowance and personal leave days.

BUILDING COSTS

Technical Services

Space occupied of total space	5.38%
Total building cost per year	$33,940.00
Cost of space for 6 employees per year (5.38% of $33,940.)	$ 1,825.97
Cost of space per person ($1825.97 ÷ 6)	$304.329
Hourly cost per person	$ .207 per hour

Union Catalog of Medical Periodicals

Space occupied of total space	5.78%
Total building cost per year	$33,940.00
Cost of space for 6 employees per year (5.78% of $33,940.)	1,961.73
Cost of space per person ($1,961.73 ÷ 6)	$326.955
Hourly cost per person	$ .222 per hour

Circulation Department

Space occupied of total space	5.01%
Total building cost per year	$33,940.00
Cost of space for 3 employees per year (5.01% of $33,940.)	1,700.39
Cost of space per person ($1,700.39÷3)	$566.798
Hourly cost per person	.3856 per hour

TECHNICAL SERVICES - PERSONNEL OVERHEAD

Books and journals per year (professional collection)	$5,798.00
25% of postage ($768. x .25)	192.00
4/13 of telephone ($2372 x 4/13)	729.84
Total	$6,719.84

Cost per employee per hour:
$6719.84 ÷ 1470 x 6 — $.762

Total hourly cost is:
$.762 plus $2.059 (administrative cost) plus $.207 (technical services hourly cost per person) equals per hour per employee — $3.028

Xerox Cost

1/6 of Xerox cost, which is $337.50 per year was added on to the cost of the operation

Computer Programs

Per year — $550.

UNION CATALOG OF MEDICAL PERIODICALS

Personnel Overhead

Miscellaneous Expenditures		$232.00
Consultants		400.00
Professional Fees		500.00
4/13 of telephone ($2372 x 4/13)		729.85
25% of postage ($768 x .25)		192.00
	Total	$2,053.85

Cost per employee per hour:
$2,053.85 ÷ 1470 x 6 — $.233

Total hourly cost is:
$.233 plus $2.059 (administrative cost) plus
$.222 (UCMP hourly cost per person) equals — $2.514
per hour per employee

CIRCULATION DEPARTMENT - PERSONNEL OVERHEAD

Administrative costs per person	$2.059 per hour
Building overhead (for circulation department personnel)	$ .386 per hour
2/13 of telephone ($2372 x 2/13) ÷ 1470 =	$ .248 per hour
TWX rental $60 per month 60 ÷ 122.5 =	$ .489 per hour
15% of postage ($768 x .15) ÷ 1470 =	$ .078 per hour
Total cost per employee per hour	$3.260

Other Expenses (not included in calculations)

Truck rental $8085 per year

Xerox rental $1012.5 per year

Medical Library Center estimates a cost of $.045 per page for every item copied.

Xerox reimbursement $2340

(This is not added into the calculations since the Medical Library Center is reimbursed.)

TWX rental $7561 per year

(10 installations)

Message charge is $.30 per minute, with a 100 word per minute tape input.

STORAGE COST PER ITEM

Each item stored utilizes 1.875 feet in length plus aisle space. This represents the total depth of the shelf plus aisle space.

The cost per square foot is calculated as follows:

Total square footage of 6th and 7th floor is 21,302.4 sq. ft.
Annual Medical Library Center building cost $33,940.00
Cost per square foot ($33,940 ÷ 21,302.4) = $1.593
Multiplying this cost by 1.875 (1.593 x 1.875) and dividing by the height of the shelves (8 ft), cost is $.373 per square foot

$.373 represents the cost per square foot per year for space to store one item on the shelves of the Medical Library Center. Thus, if an item (a monograph) were 2 inches thick, or 1/6 of a foot wide, the annual cost of storage would be:

$.373 x 1/6 = $.062

COST CALCULATION PER TRANSACTION

For the purposes of this report, overhead figure includes personnel costs (salaries, fringe benefits) plus overhead.

Chart I - Technical Services - Serials (Current Subscriptions)

I	Kardex Maintenance - each item .077 per hour (Personnel + overhead) .077 hours x 7.268 = .560	$.560
II	Claiming a serial Each claim 25 minutes = .42 hour (Personnel+overhead .42 x 7.268 = 3.053 Since 7% must be claimed, only 7% of the costs are assigned. 3.053 x .07 = .213	.213
III	Shelve in gift hold - 2 minutes (2/60 hours) per item (Personnel + overhead) 2/60 x 6.75 = .225	.225
IV	Cumulate and update - .059 hours (Personnel + overhead) .059 x 7.778 = .459	.459
V	Union Catalog Report - .0018 hours (Personnel + overhead) .0018 x 7.778 = .014	.014
VI	Shelve by title - .0147 hours (Personnel + overhead) .0147 x 6.748 =	.099
		$1.57

Xerographic Cost

Total xerographic costs are $2025 per year. 1/6 of $2025 or $337.50 per year are assigned to Technical Services. The per month cost is $28.125. Out of 2253 items processed per month, 283 or 12.56% are subscriptions. Thus, the cost for subscriptions per month is 12.56% of $28.125 equals $3.53. Since there are 283 items each month, the cost per item is $3.53 ÷ 283 = .012 per item

Total of above:

1.57 + .012 = 1.582 = 1.58

* Cost of supplies are not included since they total less than $.01.

Chart 2 - Technical Services - Serials (Gifts)

Cost Calculation per Transaction

I	Check catalog - shelve - 1 minute per item (Personnel + overhead) 1/60 x 6.758 = .113		$.113
II	Cumulate and update .059 hours (Personnel + overhead) .059 x 7.778 = .459		.459
III	Union Catalog report - .0018 hours (Personnel + overhead) .0018 x 7.778 = .014 Xerox cost .012 .026		.026
IV	Shelve by title - .0147 hours (Personnel + overhead) .0147 x 6.748 = .099		.099
			$.70

Chart 3 - Technical Services - Serials (Transfers)

Cost Calculation per Transaction

I	Receive transfers and check holdings - 1 minute (Personnel + overhead) 1/60 x 6.758 = .113	$.113
II	Cumulate and update card - .059 hours (Personnel + overhead) .059 x 7.778 = .459	.459
III	Union Catalog report - .0018 hours (Personnel + overhead) .0018 x 7.778 = .014	.014
IV	Shelve by title - .0147 hours (Personnel + overhead) .0147 x 6.758 = .099	.099
V	Xerographic cost for Union Catalog Report is $.012 per item No other supply costs	.012
		$.70

Chart 4 - Technical Services - Biological Abstracts

Cost Calculation per Transaction

I	Personnel works 20.5 hours to process 1350 items (Personnel + overhead) 20.5 hours x 7.778 = 159.449 ÷ 1350 = .118	$.118
II	Cumulate and update card .059 hours (Personnel + overhead) .059 x 7.778 = .459	.459
III	Union Catalog report - .0018 hours (Personnel + overhead) .0018 x 7.778 = .014	.014
IV	Shelve by title - .0147 hours (Personnel + overhead) .0147 x 6.758 = .099	.099
V	Xerox cost No other supply costs	.012
		$.70

Chart 5 - Technical Services - Monograph Cataloging

Cost Calculation per Transaction

I	Pull and compare with cataloged collection, 50 items take 70 minutes; 1 item takes 70/50 minutes or 7/5 ÷ 60 hours. (Personnel + overhead) 7/5 ÷ 60 x 10.638 = .248	$.248
II	Enter classmark, make out coding sheet - 5 minutes (Personnel + overhead) 5/60 x 10.638 = .886	.886
III	Enter classmark on spine - 2 minutes (Personnel + overhead) 2/60 x 7.268 = .242	.242
IV	Shelve book - .0147 hours (Personnel + overhead) .0147 x 6.758 = .099	.099
V	Key Punch Coding Sheet - 1 minute (Personnel + overhead) 1/60 x 6.438 = .107	.107
VI	Revise cards - 75 cards, 10 minutes (Personnel + overhead) (10/75 ÷ 60) x 10.638 = .024	.024
VII	Compute run 4 - 5 hours every other week 104 books every two weeks 4.5 ÷ 1.04 = .04 hours per book (Personnel + overhead) .04 x 10.638 = .426 per book	.426
		$2.032

Supply Costs:

Coding sheets	$.009 each
Computer paper; misc., less than	.001 per item
IBM tab cards each	.001
	$.010

Total $2.04

Chart 6 - Technical Services - Dissertations

Cost Calculations per Transactions

I	Sort by university and shelve temporarily - 45 seconds per dissertation = 45/3600 hours = .0125 hours (Personnel + overhead) .0125 x 6.748 = $.0844	$.0844
II	Type card, file and stamp dissertation 3 minutes = 3/60 hours = .05 hours (Personnel + overhead) .05 x 7.268 = $.3634	.363
III	Shelve dissertation - .0147 hours (Personnel + overhead) .0147 x 6.748 = $.099	.099
		$.546

No significant supply costs.

Chart 7 - Union Catalog of Medical Periodicals - Old Titles

Cost Calculation per Transaction

I	Statistics and sort - 1 minute (Personnel + overhead) 1/60 x 9.184 = .153	$.153
II	Check cards with file, add sort group number; indicate new holdings; work performed by 3 people. Personnel I + overhead (2/3 ÷ 60) x 9.184 = $.102 Personnel II + overhead (2/3 ÷ 60) x 7.364 = .082 Personnel III + overhead (2/3 ÷ 60) x 6.474 = .072 $.256	.256
III	Prepare coding; check for error; return to coder - 5 minutes; work performed by 4 people Personnel I (22%), Personnel II (22%) Personnel III (33%), Personnel IV (22%) (Personnel I 5 (2/9 ÷ 60) x 9.184 = $.170 Plus Overhead (Personnel II 5 (2/9 ÷ 60) x 7.364 = .136 (Personnel III 5 (2/9 ÷ 60) x 7.444 = .138 (Personnel IV 5 (2/9 ÷ 60) x 6.474 = .120 $.564	.564
IV	Batch and check - 5 seconds (Personnel + overhead) 5/3600 x 7.444 = .010	.010
V	Keypunch - old title - 45 seconds (Personnel + overhead) 45/3600 x 5.924 = .0738	
VI	Revise keypunching - 30 seconds; work performed by 4 people (Personnel I (15/75 ÷ 60) x .5 x 6.474 = $.0106 Plus Overhead (Personnel II (30/75 ÷ 60) x .5 x 7.364 = .0243 (Personnel III (20/75 ÷ 60) x .5 x 7.444 = .0164 (Personnel IV (10/75 ÷ 60) x .5 x 5.92 = .0065 $.058	.058
VII	Sort cards cost not included. Total cost is less than .082 per run which is insignificant per transaction. Run is 10 minutes. (Personnel) 10/60 x 4.93 = $.82	

VIII Computer Run

Update cards onto scratch	15 minutes
Update master	40 "
Print rotary file cards	90 "
80/80 complete	4 hours
80/80 supplement	45 minutes
no. complete 80/80	190 minutes
complete 80/80	4 hours and 190 minutes

Assuming monthly run, 500 cards 190/500 = .38 minutes per card.
.38/60 x 7.44 = .047

IX Check against Rotary File - 30 seconds per card

Plus Over-head
(Personnel I .4 x .5 x 7.364/60 = .0245
(Personnel II .4 x .5 x 6.474/60 = .0216
(Personnel III .4 x .5 x 7.44/60 = .0124
.059 .059

X Total new cards done by 3 people. This is 4 times previous total.
.059 x 4 = .234 .234

XI Supply costs

a) Xerography - $337.50 assigned per year to Union Catalog: 6000 items per year Each item is $337.50 ÷ 6000 = .056	.056
b) Each item is reported on UCMP report card costing	.015
c) Each item is coded on a holdings form	.011
d) Each item is keypunched, cost per card	.001
e) Each item generates new rotary file card	.001
f) Each item generates print-out, cost not significant	
Supply Total	~~$0.000~~ $.084

Total ~~$0.000 + $0.00~~
$1.538 = $1.54

Chart 7 - Union Catalog of Medical Periodicals - New Titles

Cost Calculation per Transaction

I	Statistical sort - 1 minute	
	(Personnel + overhead) 1/60 x 9.184 = .153	$.153
	Check cards with file	
	1/3 of "old title" calculations	.080
	.333 x .256 = .0853	
II	Verify bibliographic data - 15 minutes	
	Work performed by Personnel I (60%); Personnel II (20%);	
	Personnel III (20%)	
Plus	(Personnel I 9/60 x 9.184 = $1.379	
Over-	(Personnel II 3/60 x 7.364 = .368	
head	(Personnel III 3/60 x 7.444 = .372	2.119
	$2.119	
III	Code and type temporary slip - 5 minutes	
	Work performed by Personnel I (50%); Personnel II (50%);	
Plus	(Personnel I 2.5/60 x 9.184 = $.383	
Over-	(Personnel II 2.5/60 x 7.364 = .307	
head	$.690	.690
IV	Assign sort group number, transfer to coding sheet and file temporary card - 2 minutes. Work performed by Personnel I (40%); Personnel II (20%); Personnel III (40%)	
Plus	(Personnel I (.4) (2)/60 x 7.364 = .0982	
Over-	(Personnel II (.2) (2)/60 x 7.444 = .0496	
head	(Personnel III (.4)(2)/60 x 6.474 = .0663	
	$.204	.204
V	Examined by Personnel	
	(Personnel + overhead) 1/60 x 9.184 = .153	.153
VI	Batch and check - 5 seconds	
	(Personnel + overhead) 5/3600 x 7.444= .0010	.0010
VII	Keypunch new titles - 4 minutes (more cards in new titles)	
	(Personnel + overhead) 4/60 x 9.924 = .3969	.3969

VIII	Revise keypunching (Personnel + overhead) . 058 x 4 = . 232	. 232
IX	Check against rotary file - 30 seconds per card	
Plus	(Personnel I . 4 x . 5 x 7. 364/60 = $. 0245	
Over-	(Personnel II . 4 x . 5 x 6. 474/60 = . 0216	
head	(Personnel III . 4 x . 5 x 7. 444/60 = . 0124	
	$. 059	. 059
X	Computer run (no complete 80/80) - 190 minutes 190/500 = . 38 minutes per card (Personnel + overhead) . 38/60 x 7. 444 = . 047	. 047
	Total	$4. 091

Supply Costs	
Xerox cost is $. 056 per item	$. 056
Union Catalog of Medical Periodicals report card	. 015
Each item generates rotary file card	. 010
Each item utilizes frequency form	. 010
Each item utilizes 4 IBM tab cards	. 004
Each item utilizes rotary file card	. 001
Total	$. 096

Total	$4. 19

2

Chart 8 - Circulation Department

Cost Calculation per Transaction

Medical Library Center items

I	Retrieve item from shelf 7th floor - 5 minutes (6th floor items not included) (Personnel + overhead) 5/60 x 8.11 = .676	$.676
II	Fill out charge card and send (Personnel + overhead) 2/60 x 8.11 = .270	.270
		$.946

Added Costs

1. Xerographic Cost

If an item is xeroxed, there are two costs: personnel time plus cost of xeroxing. The cost per page of xeroxing is then:

Time required to xerox 5 pages is 8 minutes or .0267 hours per page.

(Personnel + overhead) .0267 x 8.11 = .2165 or $.217

Cost of xeroxing per page is $.045

The cost per page of xeroxing is then:

.045 + .217 = $.262

2. TWX Costs

If the TWX is utilized, then one message (100 words) costs should be added to the calculation, i.e. $.30.

The reason for separating the monthly cost from the message cost is that the monthly cost is constant and will be charged to the Center, regardless of the TWX usage. The additional message cost will be charged only when the TWX is utilized.

The cost for retrieving a Medical Library Center item is $.94 per item. If xerographic copies are made, an additional cost of $.262 per page should be added. If the TWX is utilized then an additional $.30 should be added.

Example: A five page item requested, xeroxed and sent represents a cost (excluding delivery) to the Center of:

.94 + 5 x ($.262) - $2.25

Chart 8 - Rental Items

Cost Calculations per Transaction

I	Retrieve item from shelf: 6th floor - 12 minutes 12/60 x 8.11 = $1.622 7th floor - 5 minutes 5/60 x 8.11 = .676 1/3 of items are on 6th floor, 2/3 are on the 7th floor. 1/3 (1.6222) + 2/3 (.676) = $.99	$.99
II	Fill out rental card and send - 2 minutes (Personnel + overhead) 2/60 x 8.11 =	.270
	Total	$1.26
	Rental charge card $.0067 per card	.0067
	Total	$1.27

Transaction cost - $1.27

DELIVERY COSTS

Truck rental - total annual cost -		$8085
Total salary cost for drivers		$12,100.10
		$20,185.10
Total deliveries	1969	21,736
Total pickups	1969	21,188
Total Medical Library Center items delivered	1969	2,000

The cost per delivery is difficult to estimate from available figures. The actual cost of one delivery is dependent on the distance traveled. Also, since pick-ups and deliveries are allowed among the members en route, approximately 630 possible costs are feasible.

The number of delivery costs may seem high but if one considers that delivery from the Center to each of its 35 members represents 35 different costs and that each member has 35 other potential costs, the number of costs seem reasonable.

Another problem in calculating delivery costs is that deliveries are made along routes, so that even if two pickups may be 10 miles apart, the items to be delivered may travel 20 miles due to other route stops.

To determine a reasonable estimate of delivery costs, a gross estimate will be taken. The number of deliveries divided by the total amount of delivery service cost would be:

$$\$20,185 \div 21,736 = \$.929 \text{ per delivery}$$

Estimated Cost per Mile

If one wishes to obtain an estimate of a cost per mile to deliver one item, the following calculation may be used.

Weekly average mileage for delivery trucks is 965 miles

Total cost per year is $20,185; weekly cost is $20,185.10 ÷ 52 = $388.175

Cost per mile to deliver an item is: $388.175 ÷ 965 = $.402 per mile.

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